Notice of Allowability	Application No.	Applicant(s)	
	09/771,137	JUDSON, BRUCE A.	
	Examiner	Art Unit	
	Sam Bhattacharya	2687	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the Amendment filed on February 14, 2005*.

2. ☐ The allowed claim(s) is/are *24-26,28,30-38,40 and 42-45*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20050909* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kenneth K. Vu on 9/15/05.

The application has been amended as follows: the claims are amended as follows:

24. (Currently Amended) A method for forward link beam forming in a wireless communication system, comprising:

forming a plurality of antenna beam patterns, each of the antenna beam patterns having a corresponding signal transmission energy and being directed to a ~~different user~~ plurality of users of the wireless communication system;

determining a statistic for ~~each of the different~~ a specific user among the plurality of users, said statistic comprising an average of a power control signal over a specified time interval from the specific user; [and]

narrowing [each] one of the antenna beam patterns based solely on the statistic of the specific user ~~to which each of such antenna beam patterns is respectively directed~~ and focusing the signal transmission energy of said one antenna beam pattern on the specific user to obtain an optimized antenna beam pattern for the specific user; and

using the optimized antenna beam pattern to transmit communication signals to the specific user.

25. (Currently Amended) The method of claim 24, further comprising storing the antenna beam patterns.

26. (Currently Amended) The method of claim 24, wherein each of the antenna beam patterns is narrowed through a dithering algorithm.

27. (Canceled)

28. (Currently Amended) The method of claim 24, wherein the statistic of ~~one of~~ the ~~different users~~ specific user is further determined from a data rate control signal from ~~said one of the different users~~ the specific user.

29. (Canceled)

30. (Currently Amended) The method of claim 24, wherein the ~~statistic of one of the different users~~ average comprises a running average of ~~a~~ the power control signal from ~~said one of~~ the ~~different users~~ specific user.

31. (Currently Amended) The method of claim 24, wherein the ~~statistic of one of the different users~~ average comprises a weighted average of ~~a~~ the power control signal from ~~said one of~~ the ~~different users~~ specific user.

32. (Currently Amended) The method of claim 24, the antenna beam patterns are formed using an adaptive antenna array.

33. (Currently Amended) The method of claim 24, further comprising communicating with ~~one of~~ the ~~different users~~ specific user over ~~a~~ the forward link of ~~a~~ the wireless communication system using the antenna beam pattern directed thereto.

34. (Currently Amended) The method of claim 33, wherein the wireless communication system comprises a wideband code division multiple access communication system.

35. (Currently Amended) A system for forward link beam forming in a wireless communication system, comprising:

an antenna configured to generate a plurality of antenna [beams] beam patterns, each of the antenna [beams] beam patterns having a corresponding signal transmission energy and being directed to a ~~different user~~ plurality of users of the wireless communication system;

a control signal monitoring module configured to receive a power control signal from a specific user among the plurality of users and to output a sequence of monitored signals;

a signal statistic computation module configured to determine a statistic for ~~each of the different users~~ the specific user, said statistic comprising an average of the sequence of monitored signals from the control signal monitoring module over a specified time interval; [and]

an antenna beam pattern optimizing module configured to narrow [each] one of the antenna beam patterns based solely on the statistic of the specific user ~~to which each of such antenna beam patters is respectively directed~~ and focusing the signal transmission energy of said one antenna beam pattern on the specific user to obtain an optimized antenna beam pattern for the specific user; and

a base station using the optimized antenna beam pattern to transmit communication signals to the specific user.

36. (Currently Amended) The system of claim 35, wherein the antenna comprises an adaptive array module configured to output and direct each of the antenna beam patterns to its respective user.

37. (Currently Amended) The system of claim 35, further comprising an antenna beam pattern storing module configured to store the antenna beam patterns.

38. (Currently Amended) The system of claim 35, wherein the antenna beam pattern optimizing module uses a dithering algorithm to narrow the antenna beam patterns.

39. (Canceled)

40. (Currently Amended) The system of claim 35 ~~further comprising a control signal monitoring module configured to receive a control signal from each of the different users~~, wherein the ~~control signal from one of the different users comprises~~ statistic is further determined from a data rate control signal from the specific user.

41. (Canceled)

42. (Currently Amended) The system of claim 35, wherein the ~~statistic of one of the different users~~ average comprises a running average of ~~a~~ the sequence of monitored signals from ~~said one of~~ the ~~different users~~ control signal monitoring module.

43. (Currently Amended) The system of claim 35, wherein the ~~statistic of one of the different users~~ average comprises a weighted average of ~~a~~ the sequence of monitored signals from ~~said one of~~ the ~~different users~~ control signal monitoring module.

44. (Currently Amended) The system of claim 35, wherein each of the antenna beam patterns is capable of supporting forward link communications in ~~a~~ the wireless communication system.

45. (Currently Amended) The system of claim 44, wherein the wireless communication system comprises a wideband code division multiple access communication system.

END OF EXAMINER'S AMENDMENT

The following is an examiner's statement of reasons for allowance: the prior art fails to disclose the recited combination of elements in a system and method for forward link beam forming in a wireless communication system, including determining a statistic for a specific user among the plurality of users, statistic comprising an average of a power control signal over a specified time interval from the specific user; narrowing one of the antenna beam patterns based solely on the statistic of the specific user and focusing the signal transmission energy of said one antenna beam pattern on the specific user to obtain an optimized antenna beam pattern for the specific user; and using the optimized antenna beam pattern to transmit communication signals to the specific user, as in claims 24 and 35.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Bhattacharya whose telephone number is (571) 272-7917. The examiner can normally be reached on Weekdays, 9-6, with first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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